

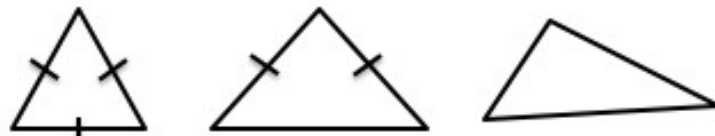
(2) Angles in special quadrilaterals

Do now - find the acute angle between the minute and hour hands

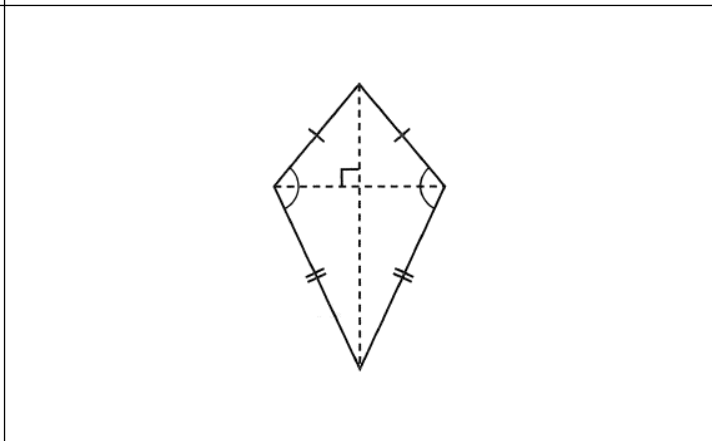
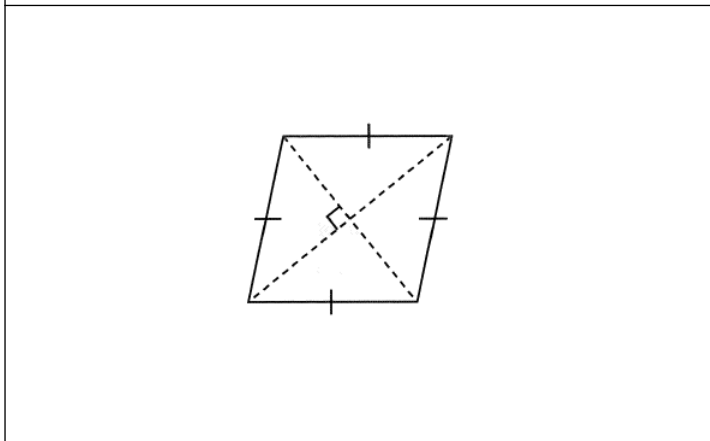
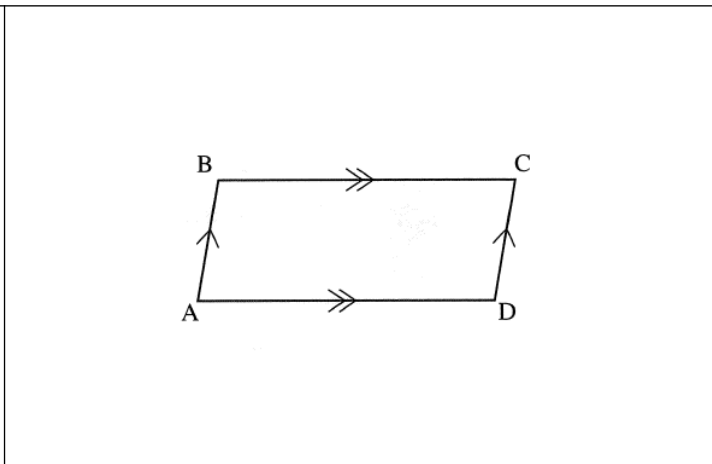
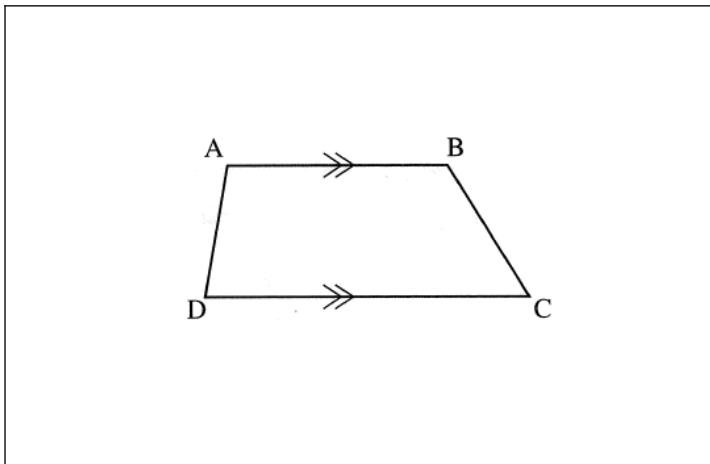
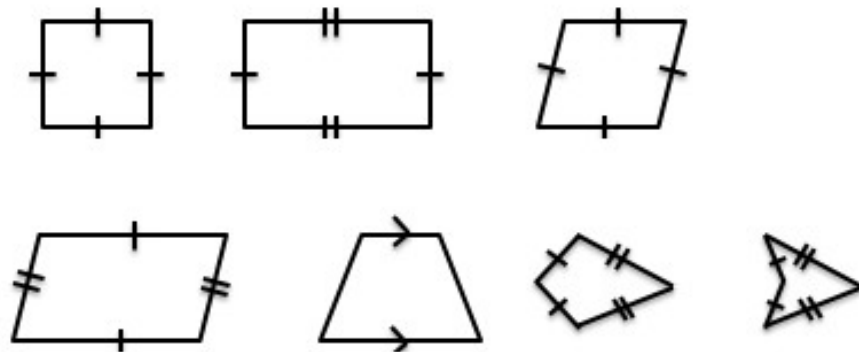
A polygon is

Sides:

3 {



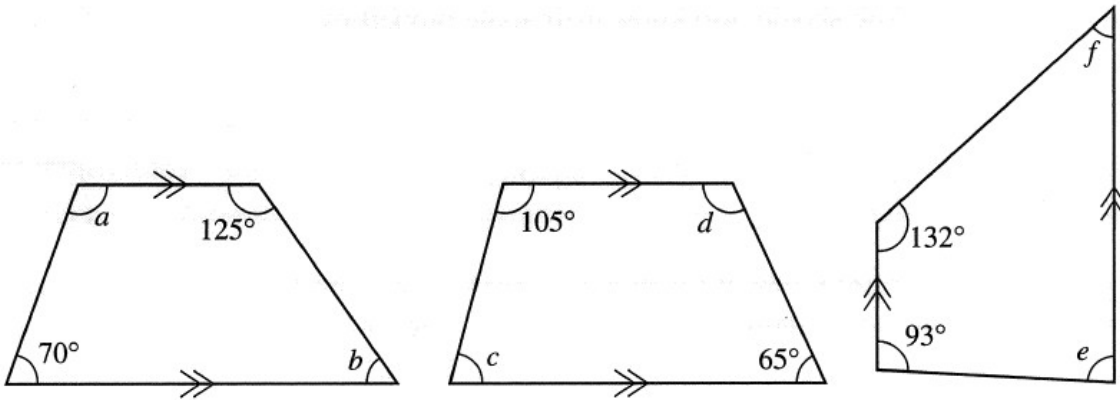
4 {



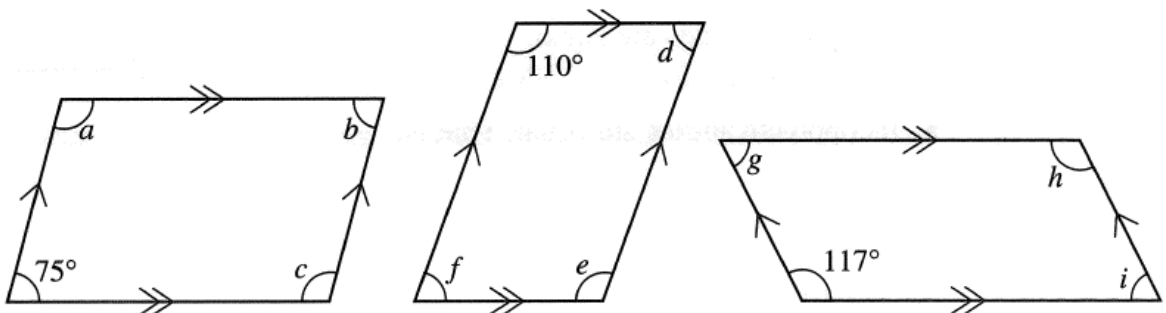
Exercise



- 1 For each of these trapeziums, calculate the value of the lettered angles.

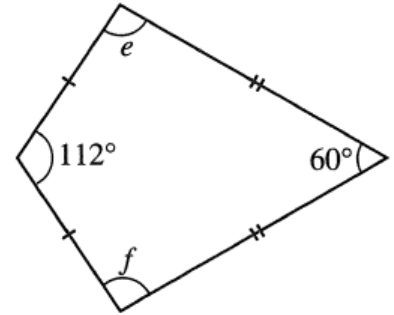
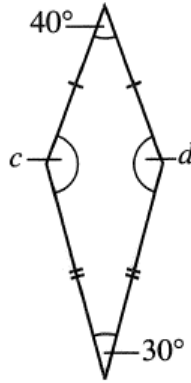
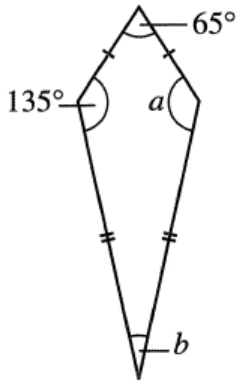


- 2 For each of these parallelograms, calculate the value of the lettered angles.

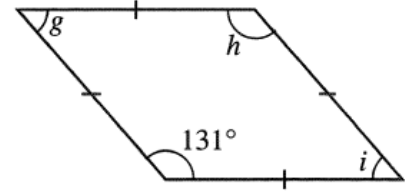
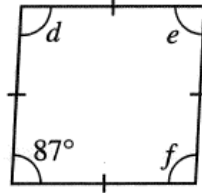
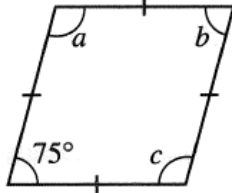




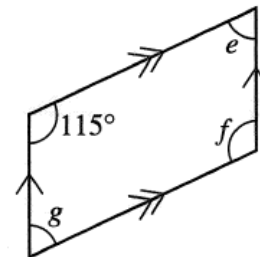
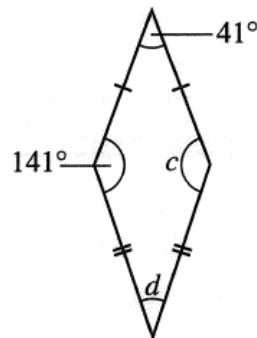
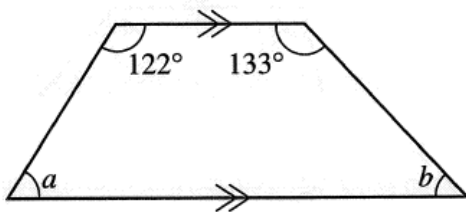
3 For each of these kites, calculate the value of the lettered angles.



4 For each of these rhombuses, calculate the value of the lettered angles.

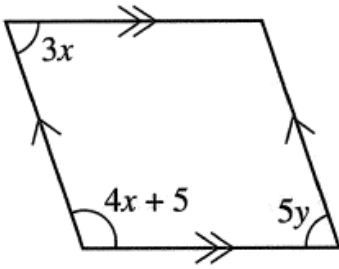


5 For each of these shapes, calculate the value of the lettered angles.

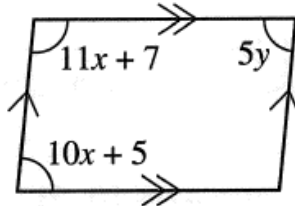


6 Calculate the values of x and y in each of these parallelograms.

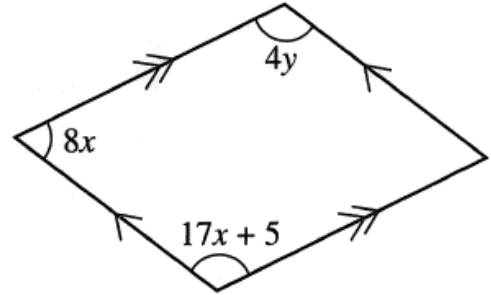
a



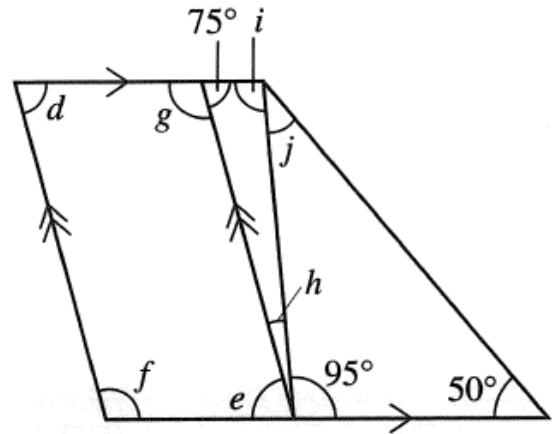
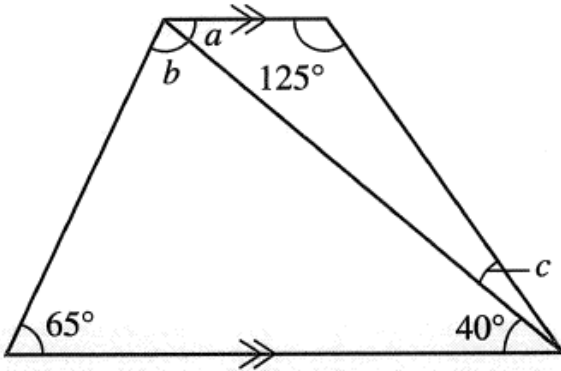
b



c

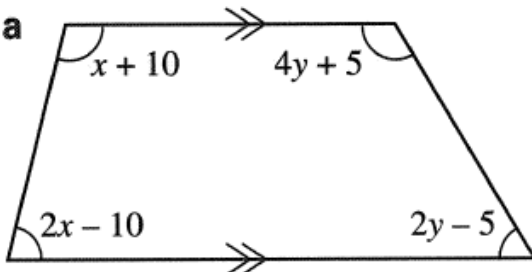


7 For each of these shapes, calculate the value of the lettered angles.

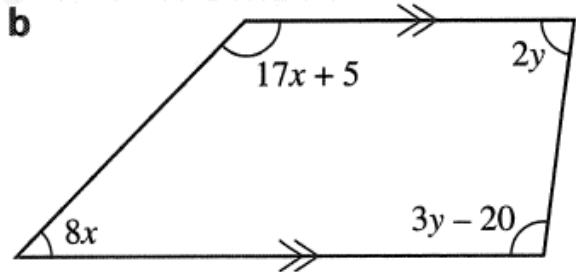


8 Calculate the values of x and y in each of these trapeziums.

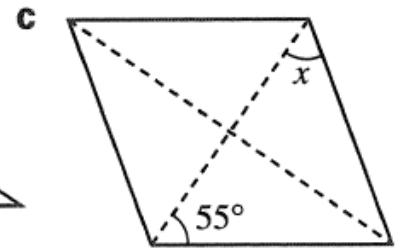
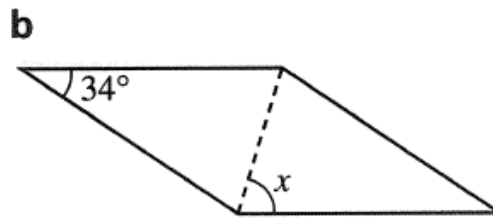
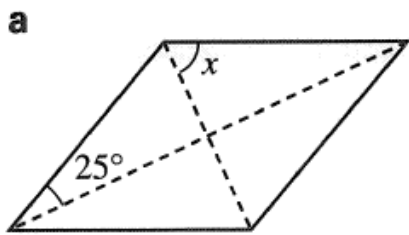
a



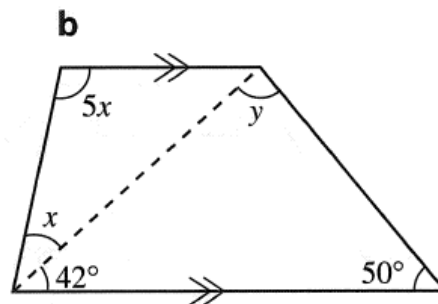
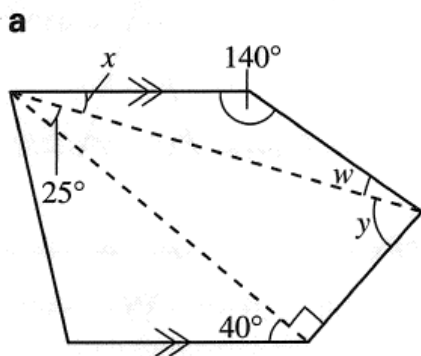
b



9 Calculate the value of x in each of these rhombuses.



10 Calculate the values of the letters in each of these shapes.



Extension

11 Find the value of x in each of these quadrilaterals and hence state the type of quadrilateral it is.

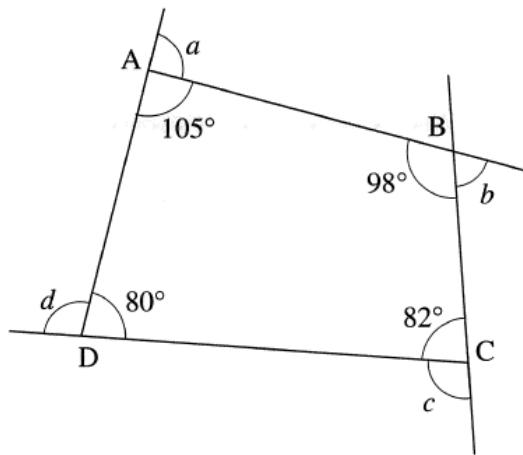
a One with angles $x + 10$, $x + 20$, $2x + 20$, $2x + 10$

b One with angles $x - 10$, $2x + 10$, $x - 10$, $2x + 10$

c One with angles $x - 10$, $2x$, $5x - 10$, $5x - 10$

d One with angles $4x + 10$, $5x - 10$, $3x + 30$, $2x + 50$

! PROOF 12



- a** The quadrilateral ABCD has interior angles 100° , 98° , 82° and 80° . Calculate the exterior angles (marked a, b, c, d) for each of the interior angles. What is the sum of the angles a, b, c, d ?
- b** Prove that the sum of the exterior angles of any quadrilateral is 360° .